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ABSTRACT

Can the way children learn Chinese help them to learn English? In this study, it is noted that there is a possibility that despite the structural differences between them, there is transference from the learning of Chinese to the learning of English. Skinner's four major reinforcement schedules were used in this study to promote this transference in the classroom situation. It was found that although there is little similarity between Chinese and English in terms of a stimulus-response paradigm or in terms of mediational cues, there are benefits to learning Chinese at the same time as English. Two transfer effects are (1) learning Chinese requires memorization, and (2) writing correct Chinese requires paying attention to details. Both these effects are helpful in facilitating the learning of English. It is concluded that the transfer of skills from one language to another is possible even if the languages are typologically and orthographically different. General habits, skills and attitudes are transferred, not necessarily the specific stimulus, response or mediational cues. (Author/PMR)

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Transfer of Learning From One Language to Another

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Learning theories dealing with transfer of learning typically have adopted a stimulus-response paradigm within the same language (Kausler, 1963; Cofer & Musgrave, 1963; and Kintsch, 1970). The transfer effects were studied in the format of stimulus to stimulus (S-S paradigm), response to response transfer (R-R paradigm), stimulus-response interference or various mediational transfers.

Very little has been done in the field of transfer between two completely different languages where no similarity of stimulus or response can be found. An example of such distinctively different languages is Chinese and English.

Orthographically, English words are written with phonetic symbols, i.e., letters drawn from an alphabet made up of 26 letters. Of course, there is no perfect one-to-one correspondence between the written symbols and the sounds of the spoken language those symbols represent. For example, the sound /f/ is written in some words as "ph" and "gh" as in "photograph" and "laugh" but the letter "f" can also represent the sound /v/ as in "of." Chinese characters, on the other hand, are written with lines or strokes but there is no relationship at all between a particular stroke in the character and a particular sound in the spoken word as there is between the written and spoken forms of words in languages which make use of alphabetic writing systems. One Chinese character corresponds to one syllable of the

spoken language, and one syllable typically corresponds to one meaningful unit, i.e., a morpheme or word. In Chinese the tone of a syllable is phonemically distinctive, e.g., the word for "horse" is pronounced /mǎ/ with a dipping tone while the word for "mother is pronounced /mā/ with a level tone. A similar situation exists in English although the difference between words is one of stress placement rather than tone: e.g., "cóntract" (the noun) and "contráct" (the verb).

On the basis of various learning theories and research methologies, it is possible to study the possibility that there is transference of learning of Chinese to the learning of English. Skinner (1938) made very specific predictions about the type of behavior developed following a specific reinforcement schedule. There are four major schedules of reinforcement. The first schedule is called fix ratio schedule (FR) where an individual is rewarded for completion of a given number of required responses. A high rate of response is usually generated by this type of reinforcement schedule. This may be seen in an educational setting where reward is based on piece-work (e.g., number of books read). The second schedule is called variable ratio schedule (VR) where an individual is rewarded for completion of a varied number of required responses, but the pattern of reward is such that over a period of time, the number of required responses averages to a certain ratio. A steady high rate of response is generally produced under this type of schedule. This is not frequently seen in daily life because of the difficulty in arranging the pattern of rewards. The third schedule theoretically would produce the lowest rate of response since the reward is based on the basis of time elapsed and not on the number of responses. Regular tests in education may be considered an example of this schedule. The last schedule is called variable interval schedule (VI) where the individual is rewarded following a pattern of predesignated intervals of time; but over a certain amount of time, the invervals averaged to a given value (e.g., an hour or one month). This schedule would produce a steady low rate of response. As was the case wih the VR schedule, the difficulty in arranging the reward pattern has made this schedule infrequently used in daily life. However, many teachers may find themselves using all four schedules at one time or another. For example, in a classroom situation, a teacher may ask questions and the children raise their hands if they know the answer. The teacher may call a certain child only after he raises his hand two times (a FR2 schedule), or only after every five minutes (a FI5 schedule), or after he raises his hand various times (a FR schedule), or only after various intervals (a VI schedule). Since there are so many things to attend to in a class situation, it could be that the VI (or VR) schedule is the most convenient.

Various emotional reactions may occur in the process of establishing a given schedule of reinforcement. For instance, a FI schedule initially tends to produce a high rate of response (excitement in terms of emotion) immediately following the stimulus. It is only after a period of time that the individual comes to realize that no reward is forthcoming until a certain period of time has lapsed; and the individual learns to wait. To minimize the emotional reaction associated with the reinforcement schedule, some convincing reason should be given when a schedule is to be changed. For this study, the fixed ratio schedule was selected because the pattern of reward could be easily understood by the child and high rate of response (efficiency) could be obtained.

Two boys whose ages differed by six years were studied in a family setting. The first child received instruction in Chinese speaking and writing at the age of three. No textbook was used. American teaching methods were used. That is, the child was to progress from simple to complex, from easy words to complicated words. At first, a few simple Chinese words were selected, such as 人 (rén, "man"); 大 (dà, "big"); 天 (tiān, "day"); 水 (shuǐ, "water"); 火 (huǒ, "fire").
Some simple nouns and pronouns were chosen, e.g., 你 (nǐ, "you"); 我 (wǒ, "I"); 他 (tā, "he"); 牛奶 (níu nǎi, "milk"); 青菜 (qīng cai, "vegetable"); 水果 (shuǐguǒ, "fruit").

Then some verbs were selected, such as

吃 (chī, "eat"); 喝 (hē, "drink"); 要 (yào, "want")

etc. Initially, he was taught to read and write a single word and to repeat it, e.g., for five times at the beginning. The requirements for his reading and writing production were very strict. He was to pronounce each word carefuly and his handwriting had to be exact. Specifically, the horizontal strokes had to be written from left to right, the vertical strokes were to be from up to down, and whenever there were curves, they were to be made in the correct direction and form.

For each perfectly written word, the child received a penny. He was told that if he collected 10 pennies, he would be taken to a toy shop to buy a toy. Naturally, at the very beginning, 10 pennies took about a week and money had to be supplemented for the toy that was acceptable to the child.

After learning some single words, sentence-making was taught so that the child would find learning more interesting. The sentences introduced were at first simple, then complex. In addition, similar sentences were repeated to facilitate memorization. As a result, the child found himself progressing successfully. As he progressed, he was told, "Now that you are doing so well, Mommy is running out of money, therefore, Mommy will give you one penny for every two perfect words you write." He accepted happily. The ratio of ten pennies a toy was later increased to 20 pennies a toy with the statement that "Mommy is too busy to get to the store so often . . . " By the time the child was five years old, he was on a FR4 schedule of reinforcement; and he was taken to the store only if he collected 100 pennies. The standard of 'well written' was also raised. When the child was five and one-half years old, he wrote on the blackboard a Bible verse (John, Chapter 3, Verse 16) without looking at the book and without any assistance from others. He spent two weeks practicing the verse one-hour daily and earned three toys before the performance and one toy after the performance.

When this first child entered kindergarten, he had a very limited English vocabulary and could not even write his name in English although he could count to 100. At the end of his kindergarten year, he did poorly on his school's Metropolitan Readiness Test. He was one of two students who received a grade of C in his class of 20 students. The rest of the students had a grade of B or above. He did not, however, receive any punishment from his parents for his poor performance. He was told, as he entered the first grade, "You are to learn English from your teacher because they can teach you better than Mommy and Daddy. You are to learn it well and then come back to teach Mommy and Daddy." His school work was frequently checked. Praise was given for his improvement but no material reward was given. He wrote discrete, clear and perfectly printed letters. He took books home from school to read to his parents. His pronunciation was perfect in that he picked up the accent and the reading rhythm that the teacher had taught him. By the time he was in the third grade, he was frequently asked by his teacher to read aloud to the class and he was also elected by his classmates to write the class poster that was shown during the parent-teacher conference.

The second child received no instruction in Chinese before he was five years old. He started to attend Chinese school on Saturday morning at the same age when he entered kindergarten. The schedule of the Chinese school was relatively loose (2 hours of instruction a week) and his homework was moderately enforced to meet the school requirements. He spoke Chinese with an American accent and his Chinese writing was far from neat. However, his English vocabulary was very rich at the age of five. At his kindergarten parent-teacher conference, he was described as an active, imaginative and creative child. He was also said to be so busy in his own thinking and talking that he frequently had problems listening to the teacher or to other children. His Metropolitan Readiness Test, however, placed him at

the top of his class and indicated that he was ready for first grade. In the first grade, he had the same teacher as his brother did, but his school work was only fair for the first half of the academic year. His English writing was not exact. His reading was good but he frequently guessed at the meanings of words. He could do second grade mathematics after two months of the first grade, but his classroom behavior was a headache to his teacher. He was too active and was not paying enough attention to his work. His writing was very sloppy. Frequently his 'a's' and 'o's' were indiscriminable, his 'n's' looked like 'h's'. He also did not leave sufficient space between words. There was every indication that he would have academic problems later. At home, he was not able to work independently. He would write and do mathematics or English as long as one parent was with him. But as soon as he was left alone, he started to play and left his work. A program was then started to train him to work independently and to pay attention to his work. The program was aimed at his regular school work. Some commerical workbooks were purchased. He was required to work on first and second grade writing, spelling, and mathematics. A reward schedule similar to that used for the first child when he studied Chinese was used. At the time of this writing, there was observable improvement in the second child's writing.

How would one assess the transfer effect from learning Chinese to that of learning English? As described earlier, there is little similarity between the two languages in terms of a stimulus-response paradigm or in terms of mediational cues. This study suggests that there are benefits (if not direct transfer of the material learned) to learning Chinese when learning English, provided the parents know what is to be emphasized. Some of the transfer effects are:

1) Learning Chinese requires memorization (intentional learning) which demands great concentration on the part of a small child. This is particularly true if the child is required to produce what he has learned in the form of writing sentences or paragraphs. The ability to concentrate is easily applied to the learning of other tasks. In addition, sentence-making also requires the child to synthesize words and organize them into meaningful thoughts. Such an ability can also be transferred to other tasks. The older child, for example, has developed the habit of collecting what might be called 'junk' reading material from airports, car dealers, etc. whenever the family pays a visit to such places. As a result, when the family or friends talk about buying a car, he can immediately inform them of the various car makes, advantages, disadvantages, consumer's rating, price, etc.

2) Writing correct Chinese requires paying attention to details. In Chinese, missing a dot or a stroke, adding or misplacing a stroke all constitute error(s). Examples of missing or misplacement of strokes are as follows:

王	(wáng, "king")	大	(dà, "big")	青	(qīng, "green")
主	(zhǔ, "chief")	犬	(quǎn, "dog")	晴	(qíng, "clear")
玉	(yù, "jade")	太	(tài, "very")	清	(qīng, "pure")
日	(rì, "sun")	曰	(yuē, "to speak")	弋	(yì, "a dart")
目	(mù, "eye")	白	(bái, "white")	弌	(yī, "one")
旦	(dàn, "dawn")	百	(bǎi, "hundred")	弍	(èr, "two")

In addition, long and short strokes also make big differences in the meanings of words in some cases. The following are three examples.

田 (tián, "field")	工 (gōng, "work")	己 (jǐ, "self")
由 (yóu, "origin")	土 (tǔ, "earth")	已 (yǐ, "already")
甲 (jiǎ, "hard covering")	干 (gān, "stem")	巳 (sì, "cyclical character")

The differentiations among these simple Chinese words clearly require great attention to detail.

One common problem among first graders in their writing of English is the lack of clear discrimination between b and d, the reverse writing of some letters or numbers such as j, p, 2, or 3. A second common problem is missing dots or lines in writing i and j, or the vertical stroke of t. A third common problem is writing phonetically rather than according to the correct spelling of a word, e.g. "by" is mis-spelled as "bi". These problems were experienced by the second child who did not learn any Chinese before he attended kindergarten. None of these problems was exhibited by the first child who learned Chinese before he attended kindergarten.

The attention to detail especially facilitates the learning of English. If the length of a stroke (in Chinese) makes a difference in a word omitting or adding a whole letter in English spelling is certainly a big issue. Consequently, the first child's English spelling has been excellent in school, and he easily mastered spelling. The second child, on the other hand, showed good thinking in his English composition even in the first grade. The only problem was his spelling. He was not afraid to use wrong words to express his ideas. His spelling, however, showed a great deal of guessing.

3) Learning to speak correct Chinese requires paying attention to the different tone of each word. The same pronunciation with a different inflection gives a different meaning. The following are some examples.

媽 (mā, "mother")	驅 (qū, "to expel")	菖 (chāng, "sweet flag") (a kind of plant)
麻 (má, "textile fibres")	渠 (qú, "to drain")	長 (cháng, "long")
馬 (mǎ, "horse")	娶 (qǔ, "to wed")	廠 (chǎng, "factory")
罵 (mà, "to curse")	去 (qù, "to go")	唱 (chàng, "sing")

After learning such differentiations, a little child can easily learn correct English pronunciation and rhythms. The second child had a very rich English vocabulary. But his reading rhythm was far from perfect and very frequently he was half-guessing in his reading. His pronunciation is also not very good. The differentiation between long and short vowels requires special effort on his part. No such problem was experienced by the first child.

In conclusion, it is suggested that the transfer of skills from one language to another is possible even if the two languages are typologically and orthographically different. General habits, skills and attitudes are transferred, not necessarily the specific stimulus, response or mediational cue(s).

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